

**Amendments to the Claims:**

The following listing of claims will replace all prior versions, and listings, of claims in the application:

- 1-17. (Canceled)
18. (New) An on-chip optical interconnection circuit, comprising:
  - a first circuit block provided on an integrated circuit chip;
  - a second circuit block provided on the integrated circuit chip;
  - a first element having a light emitting function provided on the first circuit block;
  - a second element having a light receiving function provided on the second circuit block; and
  - an optical waveguide being provided on the integrated circuit chip,
  - the first circuit block being connected to the second circuit block through the optical waveguide, and
  - the optical waveguide being in contact with the first element and with the second element.
19. (New) The on-chip optical interconnection circuit according to Claim 18, the first circuit block and the second circuit block being electrically connected to each other.
20. (New) The on-chip optically interconnection circuit according to Claim 18, the first element electrically connected to the first circuit block and optically connected to the optical waveguide,
  - the second element electrically connected to the second circuit block and optically connected to the optical waveguide.
21. (New) The on-chip optically interconnection circuit according to Claim 18,

at least a portion of the optical waveguide covering the first element and the second element.

22. (New) The on-chip optically interconnection circuit according to Claim 18, at least a portion of the optical waveguide being provided on top surface of the first circuit block and the second circuit block.

23. (New) The on-chip optically interconnection circuit according to Claim 18, at least a portion of the optical waveguide crossing at least one of the first circuit and the second circuit.

24. (New) The on-chip optically interconnection circuit according to Claim 18, at least a portion of the optical waveguide being provided to bypass the first circuit and the second circuit.

25. (New) The on-chip optically interconnection circuit according to Claim 18, the first circuit block and the second circuit block being one of a CPU, a memory circuit, a DSP, a RF amplification circuit, an image sensor, and a biosensor.

26. (New) The on-chip optical interconnection circuit according to Claim 18, the optical waveguide being a transmission line for data signals or clock signals.

27. (New) An on-chip optical interconnection circuit, comprising:  
a plurality of circuit blocks provided on an integrated circuit chip;  
a plurality of optical waveguides; and  
a plurality of elements having a light emitting function or a light receiving function;  
the plurality of circuit blocks being optically connected to each other through at least one of the plurality of optical waveguides,  
the plurality of elements electrically connected to the plurality of circuit blocks and optically connected to the plurality of optical waveguides;

two or more elements of the plurality of elements provided on one of the plurality of circuit blocks, and

at least one of the plurality of optical waveguides being provided for each of the two or more elements.

28. (New) An on-chip optical interconnection circuit, comprising:

a substrate;

a plurality of integrated circuit chips being mounted on the substrate;

a plurality of optical waveguides;

a plurality of circuit blocks provided on each of the plurality of integrated circuit chips; and

a plurality of elements having a light emitting function or a light receiving function being provided on each of the plurality of circuit blocks;

the plurality of circuit blocks being optically connected to each other through at least one of the plurality of optical waveguides, and

the plurality of integrated circuit chips being optically connected to each other through at least one of the plurality of elements, and at least one of the plurality of optical waveguides.

29. (New) The on-chip optical interconnection circuit according to claim 28,

the integrated circuit chip and the plurality of integrated circuit chips being mounted on the substrate,

the plurality of integrated circuit chips being mounted close to each other, and

the plurality of integrated circuit chips being electrically connected to each other.

30. (New) The on-chip optical interconnection circuit according to Claim 18,

the optical waveguide including a light scattering frame scattering a light,  
emitted by the first elements.

31. (New) The on-chip optical interconnection circuit according to Claim 18,  
the optical waveguide including a light reflecting frame reflecting a light,  
emitted by the first elements.

32. (New) An electro-optical device, comprising:  
the on-chip optical interconnection circuit according to Claim 18.

33. (New) An electronic apparatus, comprising:  
the on-chip optical interconnection circuit according to Claim 18.